

# CORDIN

## SCIENTIFIC IMAGING

### HIGH SPEED GATED INTENSIFIED CMOS CAMERA

## Models 222, 222-UV

- **8 channels / 16 frames**
- **High resolution CMOS sensor**, 7.1 M pixels, 12 bit dyn. range
- **Extremely short exposure time**, down to 2.5 ns
- **Very high sensitivity**, enabling very short exposures in moderate light or microscope configurations
- **Very high framing rate**, Nanosecond interframe times (selectable from 0 ns to 10 ms in 250 ps steps)
- **Independent control of gain**, exposure time and time delay for each channel
- **Display adjustment** sliding scale to view 8 bit subsamples of full 12 bit images on the fly



The **Cordin Model 222** gated, intensified multi-channel CMOS sensor camera offers the best image quality of any multi-channel intensified camera available. It is a powerful and easy to use tool for studying events in the nanosecond to millisecond time domain. The camera system is based around a plate mirror beam splitter optical system that distributes the image from a single objective lens to eight separate imaging channels without vignetting, parallax or ghosting (-UV model uses a pyramid beam splitter which does incur some parallax). Each channel has an Multi-Channel Plate (MCP) intensifier device fiber-optically coupled to a 7.1M pixel CMOS image sensor, and can capture two images per channel, for a total of 16 images captured by the system. Time between exposures on adjacent channels can be as short as 0 nanoseconds or as long as 10 milliseconds (adjustable in 250 ps increments). Time between exposures on a single channel can be as short as 30 milliseconds.

Operation of the camera is controlled via a Gigabit Ethernet interface with user-friendly software that allows the user to set timing, sequence, gain and triggering. 12 bit images can be saved as TIFF or RAW files, and any 8 bit subsampled image can be saved as BMP or JPG files. Camera settings can also be saved and reloaded later to duplicate a set-up.

The 222 CMOS is a thoroughly new design, building on Cordin's 20+ years of experience in this technology.

#### OPTIONS

**Microscope integration / 20X and 50X microscopic lenses**

**Tele-focus macro objective lens**

**Alternate photocathode materials for choice of wavelength range sensitivity**

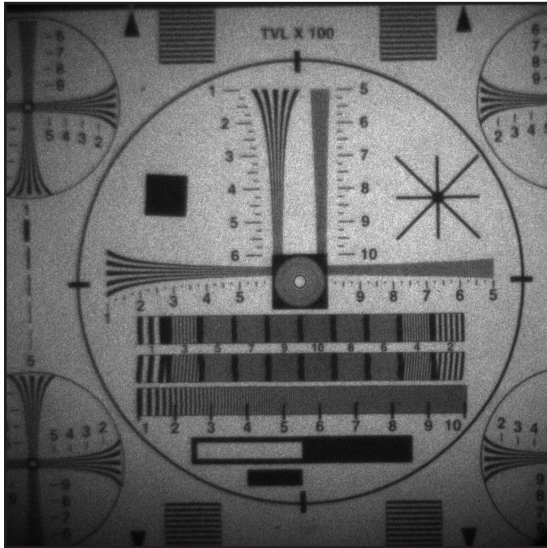
**UV configuration (model 222-UV) with 220 - 700 nm spectral range**

**Modular Design: available with fewer channels, with option of adding channels later as an upgrade**

**Sync box, allowing two cameras to operate as a single, 16-channel system**

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Raw Image of Resolution Chart at 5ns exposure

### SPECIFICATIONS

#### CMOS IMAGE SENSOR

<b>Pixels</b>	3,216 x 2,232
<b>Device Type</b>	Full resolution progressive scan
<b>Dynamic Range</b>	12 bit
<b>Size</b>	14.5 mm x 10.0 mm (4.5 um pixel)
<b>Alternate Mode</b>	2x2 Binning (1,608 x 1,116)

#### INTENSIFIER

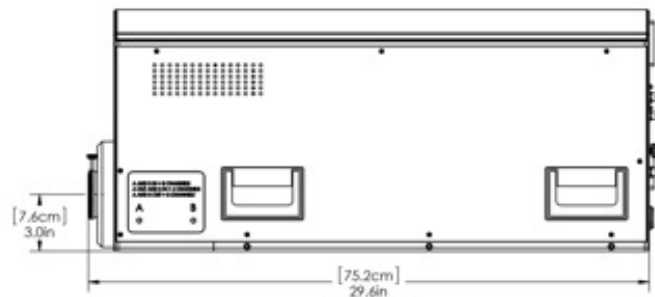
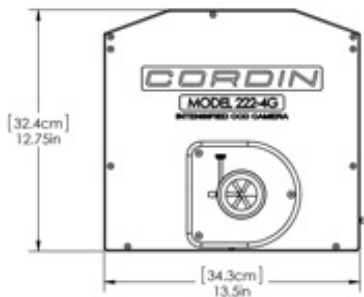
<b>Device</b>	18 mm Ø MCP
<b>Photocathode</b>	Super S25 (S20 on -UV model)
<b>Gain</b>	Up to 10,000:1
<b>Shutter Ratio</b>	107:1
<b>Grey Scale</b>	42 dB to 48 dB
<b>Resolution</b>	50 lp/mm

#### TRIGGERING AND INTERFACE

<b>Interframe Times</b>	0 ns to 10 ms in 250 ps steps with independent control of each frame
<b>Exposure Times</b>	2.5 ns to 10 ms
<b>System Response</b>	160 ns maximum
<b>Jitter</b>	±3 ns
<b>Input Triggers</b>	Logic Level, direct and isolated; Analog and Optical with threshold
<b>Outputs</b>	Monitor, two programmable TTL outputs on common time base with images
<b>Interface</b>	Gigabit Ethernet

#### OPTICS

<b>Number of Images</b>	16 images on 8 channels
<b>Objective Lens</b>	Nikon F mount (Pentax mount on -UV model, lens not included)
<b>Beam Splitter</b>	Plate mirror system (Pyramid on -UV model)



NOTE: Model 222-UV has alternate casing and dimensions. Contact Cordin for details.